

FOR OFFICIAL USE ONLY

JPRS L/9996

21 September 1981

East Europe Report

ECONOMIC AND INDUSTRIAL AFFAIRS

(FOUO 8/81)



FOREIGN BROADCAST INFORMATION SERVICE

FOR OFFICIAL USE ONLY

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

COPYRIGHT LAWS AND REGULATIONS GOVERNING OWNERSHIP OF
MATERIALS REPRODUCED HEREIN REQUIRE THAT DISSEMINATION
OF THIS PUBLICATION BE RESTRICTED FOR OFFICIAL USE ONLY.

FOR OFFICIAL USE ONLY

JPRS L/9996

21 September 1981

EAST EUROPE REPORT
ECONOMIC AND INDUSTRIAL AFFAIRS
(FOUO 8/81)

CONTENTS

CZECHOSLOVAKIA

Automated Production Sections in Machine Tool Plant Described
(Jiri Stanek, Miloslav Jezek; STROJIRENSKA VYROBA,
No 5, 1981)..... 1

POLAND

UK Government Increases Credit to Poland
(Paul Cheeseright; THE FINANCIAL TIMES, 27 Aug 81) 10

- a -

[III - EE - 64 FOUO]

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

CZECHOSLOVAKIA

AUTOMATED PRODUCTION SECTIONS IN MACHINE TOOL PLANT DESCRIBED

Prague STROJIRENSKA VYROBA in Czech No 5, 1981 pp 317-321

[Article by Eng Jiri Stanek and Eng Miloslav Jezek, VUSTE [Research Institute of Machine Building Technology and Economics], Prague: "Automated Production Sections in the TOS Hostivar Model Plant"]

[Text] The production of grinding machines is one of the most demanding types of machine production. Precision components must be provided and assembled in such a way that the final product will consistently display high precision and productivity. Our traditional producer of these machines, the TOS [Machine Tool Factories] Hostivar municipal enterprise, is successfully meeting these requirements. The steadily increasing demands of our plants, together with export requirements and the increasingly demanding nature of grinding machines themselves, which are constantly being modernized, have necessitated a complete modernization of the plant's main production facility. It became necessary to produce more than twice the number of grinding machines in the existing production areas, with moderate labor inputs.

As part of State Assignment P15-124-242, our institute has worked together with other organizations to create a production, management and social system. In the production system, we combined the manufacturing and assembly stages of production, including service and auxiliary activities, in the production areas in question (in accordance with requirements for optimal materials flow), even though these areas were not always fully suitable, owing to their configurations and certain limiting factors (location of high-rise storage facilities, location of the hardening shop and heavy machining shop and the like). The main production facility was divided into 11 production centers which were subject to the same principles regardless of their levels of automation. Of the five production centers in which machining is used in parts production, the most interesting are those for which automated production sections of the "integrated production section" (IVU) type have been designed. They are intended for the production of small rotating and nonrotating parts, medium-sized nonrotating parts and large rotating parts. In this article we give more detailed information on these production centers.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

Automated Production of Small Parts

The "Small Parts" production center consists of two automated production sections located side by side in a single production bay (Fig. 1); in addition to being governed by identical conceptual and functional principles, they also use the same type of facilities for transport, handling and storage. One of these sections is designed to produce small nonrotating components and is designated IVU 200 N, while the other, intended for the production of rotating parts, is designated IVU 200 R.

The IVU 200 N Section

This section is intended for the production of housings and flat components from steel or gray cast iron, with dimensions up to 250 x 250 x 250 mm and weights up to 30 kg. The production section is designed for the production of 100,000 parts of 300 varieties, divided into 3,600 production lots a year, with an average of 10 parts per transport lot.

The section is laid out with three rows of storage racks passing through its center; a straddle-type stowing machine transports pallets holding workpieces and production tools between the receiving or dispatching points of the process stations and the storage cells in the racks. The process stations are located along the outsides of the set of racks.

The production section has a receiving dock and a dispatching dock at the end of the rows of racks, at which the equipment for transport between production centers brings in or removes transport pallets holding workpieces. Within the section, conveyance pallets (for all process stations except the washing station), tool pallets (for conveyance of production accessories) and forklift pallets (for the adjust station, machining centers, washing unit and quality-control station) are used.

Materials Flow in the IVU 200 N Section

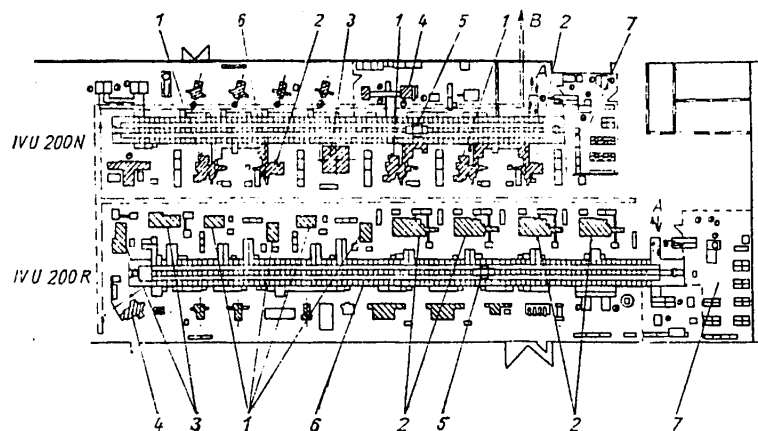
The equipment for transport between production centers brings blanks (workpieces) in transport crates on a plain transport pallet to the receiving dock. The boxes are transferred to conveyance pallets at the preparation area and are stowed in the proper cells in the racks by the stower. Then, on directions from the control center, they are transferred by the stower to the receiving points at the proper process stations. After completion of an operation they are returned to their racks by the stower. Similarly, tool pallets arrive from a decentralized production accessories preparation area and pass through the preparation station to the racks, and from them to the production accessories handling points at the processing stations.

If the operation is to be performed at a machining center or the washing unit, the components are transported to the central fastening station, where the first component in the lot is fastened to a forklift pallet. After a measuring machine is used to check the fastening of the workpiece, the pallet is placed in the rack. At least two process pallets are set up for each production lot. From the rack, the process pallet is transferred by the stowing machine to a station in the machining center for machining of the lot. The first pieces to be machined are those which were fastened to the pallet at the central fastening station, followed by the other pieces in the lot. As necessary, the forklift pallet and the workpieces may be

FOR OFFICIAL USE ONLY

transported to the washing unit and back to the receiving points of the machining centers by the stower. The workpieces may be fastened to the forklift pallet either at the center fastening station or at a fastening point at each machining center. After the operation on the production lot has been completed at the machining center, the forklift pallets are sent back by the stower for disassembly. Similarly, after performance of the required operation, the tool pallets are transferred by the stower to the receiving point of the decentralized production accessories preparation area.

Fig. 1. Layout of the IVU 200 N and IVU 200 R sections



Obr. 1. Půdorysné schéma uspořádání IVU 200 N a IVU 200 R:
 IVU 200 N: A - vstup a výstup materiálu; B - odsun třísek; 1 - obráběcí centrum OCH2; 2 - obráběcí centrum OCV2; 3 - čističí stanice; 4 - kontrola; 5 - obkrožený základáč; 6 - trojřadý regál; 7 - přípravná výrobních pomůcek;
 IVU 200 R: A - vstup a výstup materiálu; B - odsun třísek; 1 - NC soustruh 1P717F3; 2 - NC soustruh SPR 63NC; 3 - NC soustruh SPT 16; 4 - NC vrtačka 2R 135 F2; 5 - obkrožený základáč; 6 - trojřadý regál; 7 - přípravná výrobních pomůcek

Key: IVU 200 N

- A. Arrival and departure of materials
- B. Removal of cuttings
- 1. OCH 2 machining center
- 2. OCV 2 machining center
- 3. Cleaning station
- 4. Quality control
- 5. Straddle-type stowing machine
- 6. Triple row of racks
- 7. Production accessories preparation area

IVU 200 R

- A. Arrival and departure of materials
- B. Removal of cuttings
- 1. IP 717F3 numerically controlled lathe
- 2. SPR 63NC numerically controlled lathe
- 3. SPT 16 numerically controlled lathe
- 4. 2R 135 F2 numerically controlled drilling machine
- 5. Straddle-type stower
- 6. Triple row of racks
- 7. Production accessories preparation area

FOR OFFICIAL USE ONLY

The IVU 200 R Section

In this section, small rotating components weighing up to 15 kg are machined. These are flange pieces measuring up to 160 mm across and 100 mm long, and shafts up to 398 mm long made from bar stock up to 58 mm across. They may be made from steel, cast steel, gray cast iron or nonferrous metals. The section is sized for the production of 300,000 parts of 750 different types, divided into 25,000 production lots a year, with 30 parts per transport lot.

The section is laid out on the same principles as the IVU 200 N and uses technical facilities of the same design, especially in transport and handling. The process sections are similarly located on both sides of the triple row of racks. The main difference from the IVU 200 N section is that forklift pallets are not used. This means that all workpieces are transported within the section on conveyance pallets. The first operations are carried out on NC machine tools and subsequent operations on conventional machine tools or in cooperation with other sections.

The material flow in the IVU 200 R section is similar to that in the IVU 200 N in that the workpieces are transported only on conveyance pallets and the production accessories on tool pallets.

Automated Production of Medium-Sized Nonrotating Components

Medium-sized nonrotating components are produced in the IVU 1200 automated production section, and the most demanding of them are finished in the precision-finishing section, located in a climate-controlled bay. The two sections make up the "Non-rotating Components" production center, which produces housings and covers from gray cast iron or aluminum alloys, measuring from 200 to 1,200 mm (with heights of from 70 to 300 mm in the case of covers), and weighing from 10 to 400 kg.

The production center is designed for the production of 21,500 components of 100 different types. A total of 960 production lots and 3,000 transport lots are planned annually.

The IVU 1200

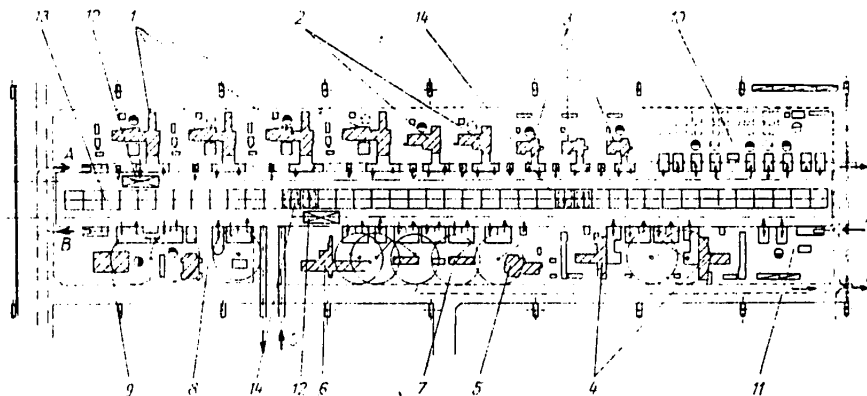
The backbone of the IVU 1200 automated production section, which is shown in Fig. 2, is the longitudinally situated handling, transport and storage system, consisting of a double row of racks with two stowers along its outside. The stowers are designed to grip the pallets from the side, and their motion is controlled by an SM 3-20 computer in the control center. The process stations are located along both sides of the racks and have separate receiving and dispatching locations for forklift and conveyance pallets which are handled by the stowers.

The material on transport pallets arrives at the IVU via two docks and a roller conveyor carries it to the stower reception point. These functions are performed entirely automatically without human intervention. The exit of components from the IVU is based on the same principle.

The same transport and storage systems are used for transporting the pallets carrying the production accessories as for those carrying the workpieces. This system is connected to the central production accessories preparation area, which adjoins the IVU 1200, by two one-directional overhead conveyors.

FOR OFFICIAL USE ONLY

Fig. 2. Layout of IVU 1200 section



Obr. 2. Půdorysné schéma uspořádání IVU 1200:

A - vstup materiálu; B - výstup materiálu; C - vstup a výstup výrobních pomůcek; D - odsun třísek; 1 - obráběcí centrum 2623 PMF 4; 2 - obráběcí centrum IR 800; 3 - obráběcí centrum 6906 VMF 2; 4 - obráběcí centrum MCFVA 80; 5 - vodorovná vyvrtávačka WHN 9A; 6 - rovinná bruska SE 800; 7 - ruční pracoviště; 8 - kontrola; 9 - mycí stanice; 10 - centrální upínací pracoviště; 11 - pracoviště pro seřizování technologických palet; 12 - zakladač ZV 1600; 13 - regál RPZ 1600 ZR1; 14 - přesuvná stanice

KVETEN 1981

319

- | | |
|---------------------------|---------------------------------------|
| A. Materials receiving | 1. 2623 PMF 4 machining center |
| B. Materials dispatching | 2. IR 800 machining center |
| C. Production accessories | 3. 6906 VMF machining center |
| reception and dispatching | 4. MCFVA 80 machining center |
| D. Cuttings removal | 5. WHN 9A horizontal boring machine |
| | 6. SE 800 surface grinding machine |
| | 7. Manuay work station |
| | 8. Quality control |
| | 9. Washing station |
| | 10. Central fastening station |
| | 11. Station for adjustment of process |
| | pallets |
| | 12. ZV 1600 stower |
| | 13. RPZ 1600 ZR1 racks |
| | 14. Pass-through tables |

The transport pallets carrying workpieces and production accessories are passed through from one set of racks to the other by four one-directional pass-through tables.

Chip removal is carried out centrally by an in-floor collecting and transport system to which the process sections are connected by removal conveyors.

The IVU uses three sizes of forklift pallets, which are transferred manually on air-cushion units (dimensions 1,200 x 800, 800 x 800, and 600 x 800 mm), one type of modified transport pallet (800 x 1.200 mm), and a tool pallet (600 x 800 mm) with a capacity of 51 tools.

FOR OFFICIAL USE ONLY

FOR OFFICIAL USE ONLY

Material Flow in the IVU 1200 Section

The IVU 1200 section receives workpieces with rough-machined surfaces on transport pallets via receiving docks (housings are received at a dock near the horizontal machining centers and covers at the other receiving dock; they are then placed in the interoperation storage area. On a command from the IVU 1200 control center, the production lots to be machined at a horizontal machining center are sent to the central fastening station, and the production lots to be machined at a vertical machining center are transported directly to that location. At the central fastening station, two to four process pallets (depending on the length of the operation) are laid out in advance for the production lots; to these are fastened all of the pieces in the production lot, after which they are transported to the proper process station for machining. After the operation is complete, the process pallets and the machined workpieces are returned to the central fastening station for removal and placement on transport pallets. The entire production lot is sent to the interoperation storage area, where it is put in its place by a stower. In the vertical machining centers, two forklift pallets with fasteners for a specialized machining station are readied in advance for the production lot. These process pallets are transferred to the vertical machining center together with the proper production lot. The components are attached to the process pallets in the overlap time (i.e., while the piece on one forklift pallet is being machined, a piece is being attached to the other pallet). After machining, the workpieces are removed and sent on transport pallets for storage in the interoperation storage area. Production lots are transported to the process stations that use conventional machine tools on transport pallets, from which they are removed and attached directly to the machines. After all of these operations (including quality control) are performed, the production lots are sent out of the IVU via a dispatching dock, from which they are automatically removed by intercenter transport equipment.

The sets of production accessories which have been readied in the accessory preparation area are sent by an overhead conveyor to the IVU, where they are stored in the interoperation storage area. On a command from the IVU 1200 control center, they are transported to the proper process stations. When the work station is being set up for a different production lot, the set of production accessories is removed from the pallet and the set which has just been used takes its place on the pallet, which is then sent back to the production accessories preparation area.

This materials flow system produces a considerable saving on forklift pallets. The number of such pallets decreases overall by more than 3.5 times as compared with the use of forklift pallets.

Automated Production of Large Rotary Components

Large rotary components are produced in the "Rotary Components" production center, which consists of the IVU 500 R automated production section, a hardening shop and a precision-finishing section located in a climate-controlled bay. The production program includes shafts 100 to 798 mm long weighing up to 45 kg and flanges measuring from 160 to 500 mm across and weighing up to 60 kg. The starting materials are steel, cast steel, gray cast iron and aluminum alloy.

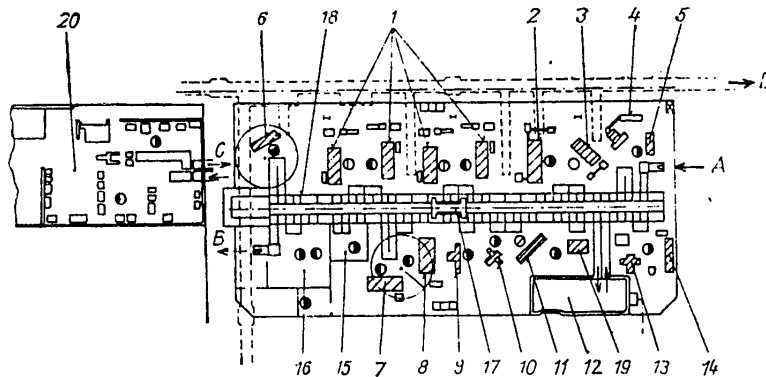
The production center machines a total of 64,000 pieces of 200 different types. The plan calls for 1,300 production lots and 2,800 transport lots a year. The repetition rate for production lots is 2.7 per year and the average number of operations is eight.

FOR OFFICIAL USE ONLY

The IVU 500 R Section

For handling, transport, and storage between operations, two rows of storage racks with a single stower are used, forming the backbone of the IVU 500 R section. On both sides of it are located the process stations, which are connected with the stower by removal equipment. The layout is shown in Fig. 3.

Fig. 3. Layout of the IVU 500 R shop



Obr. 3. Půdorysné schéma uspořádání IVU 500 R:

A - vstup materiálu; B - výstup materiálu; C - vstup a výstup výrobních pomůcek; D - odsun třísek; 1 - NC soustruh IP 752 MF3; 2 - NC soustruh SPT 32N; 3 - NC soustruh SPT 16N; 4 - NC vrtačka 2R 135 F2; 5 - vrtačka VR4; 6 - soustruh SU 50A; 7 - bruska BHU 50A; 8 - bruska BHU 32A; 9 - bruska BHS/1250; 10 - frézka FA 4AV; 11 - frézka GFL 400/2000; 12 - soustruh; 13 - obráběčka ST 350; 14 - vyvažovačka R-500; 15 - zámečnické pracoviště; 16 - kontrola; 17 - základně RZP 1000 2R1; 18 - regál H6 318; 19 - sklad pro kalitnu; 20 - příprava výrobních pomůcek

KVĚTEN 1981

321

Key: A. Material receiving

B. Material dispatching

C. Receiving and dispatching of production accessories

D. Cuttings removal

1. IP 752 MF3 numerically controlled lathe

2. SPT 32N numerically controlled lathe

3. SPT 16N numerically controlled lathe

4. 2R 135 F2 numerically controlled drilling machine

5. VR4 drilling machine

6. SU 50A lathe

7. BHU 50A grinding machine

8. BHU 32A grinding machine

9. BHS/1250 grinding machine

10. FA 4AV milling cutter

11. GFL 400/2000 milling cutter

12. Lathe

13. ST 350 shaper

14. R-500 balancing machine

15. Fitter's work station

16. Quality control

17. RZP 1000 2R1 stower

18. H6 318 racks

19. Storage for hardening shop

20. Preparation of production accessories

FOR OFFICIAL USE ONLY

In the IVU 500 R section, the material receiving and dispatching docks are connected to the stower by a roller conveyor, and the pallets are transported in an automatic cycle. The pieces reach the IVU on modified transport pallets (800 x 800 mm). The stower stows these pallets either in the interoperation storage area (rack) or in the removal points at the process stations. Operational handling of the components is done by hand, but components weighing more than 15 kg are handled by pneumatic manipulators. The pallets holding workpieces are transported between the IVU 500 R section and the hardening shop's interoperation storage area by two one-directional roller conveyors.

The sets of production accessories are prepared in the central production accessory preparation area, which is connected with the IVU 500 R shop by two overhead supply conveyors. The same pallets are used for both production accessories and workpieces. On the pallets are removable holders for the production accessories; after delivery to the process stations, these are removed and placed on the machine. The process stations have paired receiving and dispatching points for workpieces and production accessories.

Chip removal from the machines with the largest chip output is carried out by short in-floor transporters which open onto the central collection channel.

The operators of the NC machine tools tend at least two machines each. It is expected that the key machining stations, those with NC tools, will operate in three shifts, and the remainder in two shifts.

COPYRIGHT: SNTL, Praha, 1981

8480

C30: 2400/223

FOR OFFICIAL USE ONLY

POLAND

UK GOVERNMENT INCREASES CREDIT TO POLAND

PM271126 London THE FINANCIAL TIMES in English 27 Aug 81 p 4

[Report by Paul Cheeseright: "UK Steps Up Credit for Poland"]

[Text] The UK programme of financial assistance for Poland advanced yesterday when the Export Credits Guarantee Department (ECGD) announced support for three lines of credit from Lloyds Bank worth 19.1M pounds.

The lines of credit are the first since Mr John Biffen, the trade secretary, instructed the ECGD during July to provide guarantees for 45M pounds of new credits for the rest of this year.

The 19.1 pounds is divided into three lines. The first, for 3.5M pounds is for the purchase of chemicals and artificial fibres; the second, for 10.5M pounds, is for foodstuffs, mainly barley; and the third, for 5.1M pounds is for semi-capital goods and general commodities.

Although there is a lengthy history of British lines of credit for Poland, the element of assistance in this latest batch comes from the fact that chemicals and foodstuffs are not usually sold on extended terms.

Lines of credit are normally tied to the purchase of capital or semi-capital goods.

The granting of the credits' permits British exporters to maintain their presence in the market under conditions which would otherwise be uncongenial.

The loans tighten the link between Lloyds and Bank Handlwy of Warsaw, the borrower. Over half of the ECGD-backed lending to Poland has come from Lloyds.

COPYRIGHT: The Financial Times Ltd, 1981

CSO: 2020/61

END